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BUREAU OF AGRICULTURAL ECONOMICS  
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WORLD NEEDS FOR U. S. FIBER AND TOBACCO 1/

By Bennett S. White, Jr., Principal Agricultural Economist and  
Horace G. Porter, Agricultural Economic Statistician.

I. Cotton.

Textile fibers constitute the raw materials of world-wide basic industries, provide goods for clothing and shelter, and are important as production goods in manufacturing and transportation. Cotton is, by far, the most important textile fiber in production and consumption. Other important apparel fibers are wool, silk, flax, and synthetics such as rayon. Those used largely for bagging or cordage include mainly jute, abaca, sisal, henequen, and hemp.

Total world production of the principal fibers increased by about one-third from 1910-14 to the five years immediately preceding the outbreak of World War II. A large part of the increase in total poundage was accounted for by cotton, although significant increases in percentage terms were shown in all except hemp. By 1939 rayon had increased more than tenfold. Although carry-overs, particularly of cotton, were higher in the late 1930's than in the 1910-14 period, the production figures shown in Table 1 give a fairly accurate indication of general trends in world consumption. The general upward trend in production and consumption of fibers was due to larger population and to increased industrialization and higher levels of consumer income.

Standards of needs or minimum requirements necessary to maintain health and strength have not been developed for fibers to such an extent as for foods. A certain amount of clothing is required for all people, but such requirements vary greatly depending upon differences in climate and conditions of life. Since textiles are also widely used for non-clothing purposes, their consumption is largely a function of custom, availability, relative prices, and above all, consumer incomes and standards of living. Just before World War II the average

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per capita consumption of cotton in the world was only about 6-1/4 pounds. However, utilization in the various countries ranged from around 25 pounds per person in the United States to as low as 2 or 3 pounds in Afghanistan, Indo-China and parts of Africa.

As a normal thing there is a high degree of relationship between changes in industrial activity and cotton consumption (Neg. 20570). The cause for this is at least twofold. As shown in Table 2, apparel uses accounted for about 3/8 of the cotton consumed in 1937 and 1939, the 2 years for which data are available. An additional 1/4 of consumption is accounted for by household uses. Demand for both these classes of products as well as for other consumer goods is directly affected by fluctuations in consumer purchasing power, which in turn is strongly influenced by industrial production. The remaining 3/8 of the cotton consumed went directly into industrial uses. The largest industrial use of cotton was in automobile tires, accounting for 9.1 percent of total consumption. Next in importance were bags, 6.7 percent, and cordage, 4.9 percent.

Inasmuch as most of these goods are far more durable than foods, much greater latitude is possible in the timing of purchases. Purchases are postponed in time of depression and increased in time of high industrial activity and consumer incomes. The quantity of cotton made available to consumers in the United States declined from an average of 26 pounds in the five years 1925-29 to less than 20 pounds in the period 1930-34, rose to the level of the late 1920's in the period 1935-39, and has reached an all-time high during the current war period.

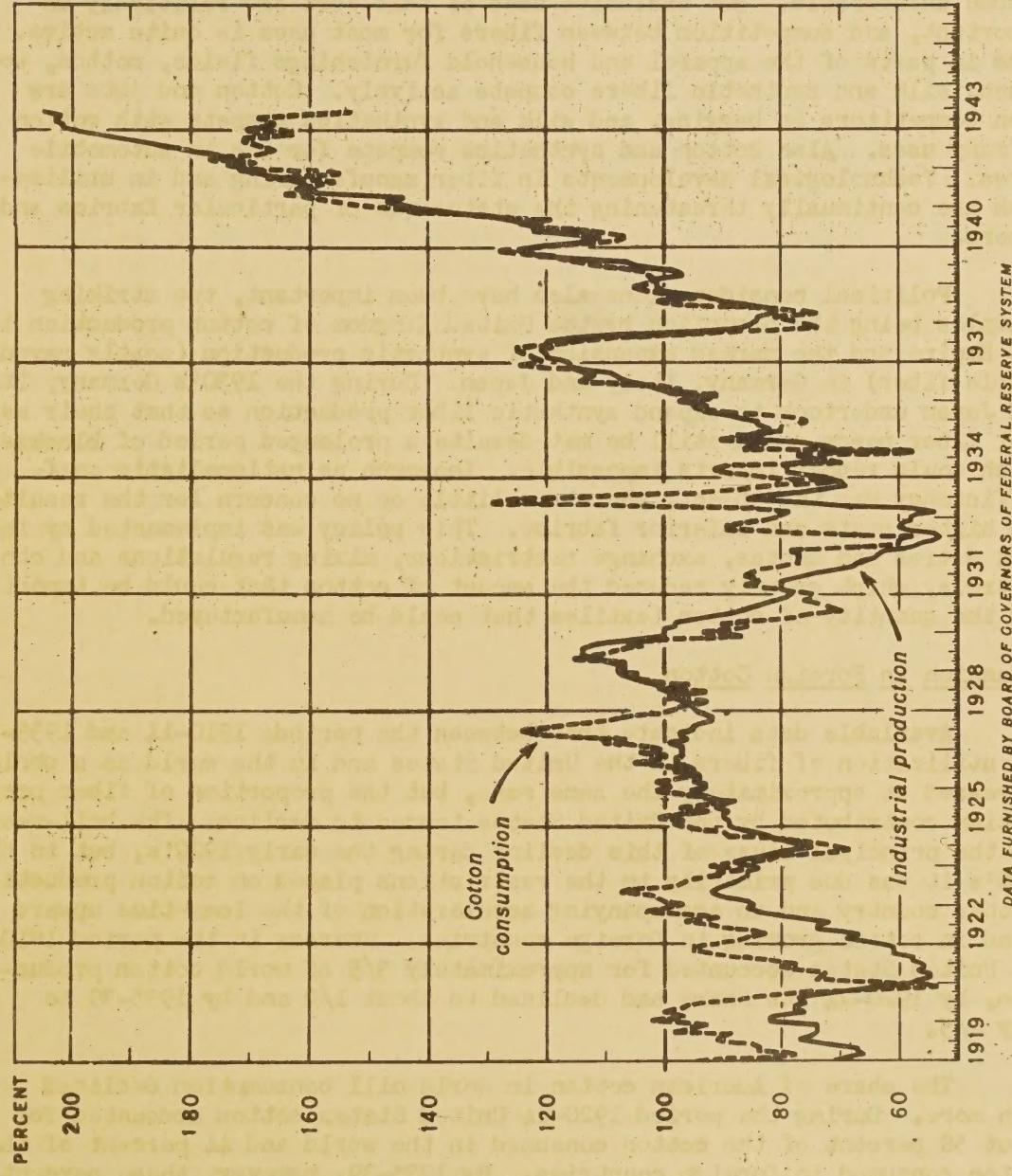
Mention has been made of variations in cotton consumption, first between different countries, and secondly between periods of prosperity and depression in the same country. A third difference that should also be noted is that at any given time consumers with high incomes use a much larger quantity of cotton goods than do the low-income groups. The consumption of the more expensive apparel fibers - wool, silk, rayon and flax - shows an even greater variation with levels of income and response to fluctuations in income, than does the consumption of cotton. The demand for cordage and bagging fibers is closely related to changes in the volume of agricultural production and industrial activity and to difference in the degree of industrial development in various parts of the world.

In general, consumer purchasing power, the physical volume of shipping and agricultural production, the level of industrial production, fiber prices, and competition with other materials (for instance between jute and paper, and between abaca and steel rope) govern the aggregate amount of fibers to be used. The volume relationships of the fibers, however, are affected by the natural properties of the fibers themselves, customs, and relative costs.

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# INDUSTRIAL PRODUCTION AND COTTON CONSUMPTION UNITED STATES, 1919-43

INDEX NUMBERS (1935-39=100) ADJUSTED FOR SEASONAL VARIATION



U. S. DEPARTMENT OF AGRICULTURE

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The October, 1943, revision of the Federal Reserve index of industrial production would not materially affect the conclusions drawn from this chart.

Where a fiber possesses a distinct margin of superiority for a particular use - as did silk for sheer full-fashioned hosiery during the inter-war period, and as does abaca for marine cordage - it is generally able to hold the business even though price relationships with other fibers become unfavorable. But exclusive uses of this sort are relatively unimportant, and competition between fibers for most uses is quite active. Thus in parts of the apparel and household furnishings fields, cotton, wool, linen, silk and synthetic fibers compete actively. Cotton and jute are keen competitors in bagging, and silk and synthetics compete with cotton in many uses. Also cotton and synthetics compete for use in automobile tires. Technological developments in fiber manufacturing and in utilization are continually threatening the status quo of particular fabrics and fibers.

Political considerations also have been important, two striking examples being the promotion by the United Kingdom of cotton production in the Empire and the marked expansion of synthetic production (mostly rayon staple fiber) in Germany, Italy and Japan. During the 1930's Germany, Italy and Japan undertook to expand synthetic fiber production so that their essential fiber needs could still be met despite a prolonged period of blockade which would render imports impossible. Inasmuch as nationalistic self-sufficiency was the object, there was little or no concern for the resulting higher costs and inferior fabrics. This policy was implemented by import duties and quotas, exchange restrictions, mixing regulations and other controls, which greatly reduced the amount of cotton that could be imported and the quantity of cotton textiles that could be manufactured.

#### Expansion in Foreign Cotton

Available data indicate that between the periods 1910-14 and 1935-39 the utilization of fibers in the United States and in the world as a whole increased at approximately the same rate, but the proportion of fiber production contributed by the United States tended to decline. The boll-weevil was the principal cause of this decline during the early 1920's, but in the 1930's it was due primarily to the restrictions placed on cotton production in this country and an accompanying acceleration of the long-time upward trend in cotton growing in foreign countries. Whereas in the period 1910-14 the United States accounted for approximately 3/5 of world cotton production, by 1920-24 its share had declined to about 1/2 and by 1935-39 to only 2/5.

The share of American cotton in world mill consumption declined even more. During the period 1920-24 United States cotton accounted for about 58 percent of the cotton consumed in the world and 44 percent of the cotton consumed in foreign countries. By 1935-39, however, these percentages had declined to 42 percent and 25 percent, respectively. Inasmuch as this decline in consumption was not accompanied by corresponding decreases

in production, carry-overs accumulated in the United States. These were associated with the price pegging loans of the Farm Board in 1929 and 1930, and with the A.A.A. crop control and loan programs of the 1930's (Table 3).

#### Effects of the War

Large areas of the world are now subject to blockade, shipping space is short, vessels must travel under convoy, exports and imports are controlled, and priorities are given to the movement of goods most directly essential to the prosecution of the war. Foreign trade in cotton is therefore greatly restricted.

Supplies in the United States have been more than adequate, although requirements and larger civilian demands have pushed mill consumption to the approximate level reached by domestic consumption plus exports in the immediate pre-war years. But the need for larger quantities of long staple and high grade cotton in the manufacture of war goods has resulted in an effort to increase the production of the longer staples and higher grades by shifting from short staple and low grade cotton of which there was a disproportionately large supply. The war and shipping difficulties have cut off or reduced imports of abaca, jute, and some other fibers. These losses are being met in part by controls on consumption, by the substitution of cotton, synthetics, and paper, and by the revival of our domestic hemp industry.

Some of the principal foreign cotton manufacturing countries are almost entirely cut off from their former sources of supply. These include Japan and countries of continental Europe, which collectively imported over 8 million bales per year before the war. The United Kingdom is producing and exporting very few goods not essential to the prosecution of the war and consequently is utilizing only a part of her large capacity for manufacturing cotton goods.

In the United States the record level of domestic consumption has largely offset the loss of foreign markets for raw cotton, except in the shorter staples and lower grades, but this has not been true with respect to most other producing countries. Egypt, largely dependent on export, has cut cotton production to about 1/3 of the pre-war level and increased its food production. Brazil has increased its output of cotton textiles, but mill capacity is far below normal production of raw cotton and the government is helping to finance the carrying of surplus stocks. The United States has undertaken to purchase the surplus cotton of Peru, Haiti, and Nicaragua. In some of the other exporting countries an attempt is being made to reduce the production of the kinds of cotton which now are without an export outlet.

#### United States Grade and Staple Situation

It was comparatively easy to expand textile output at the beginning of the National Defense program. By putting idle equipment into operation and lengthening the work week through the addition of third shifts and

week-end operation, mills raised cotton consumption from 7.8 million bales in 1939-40 to an annual rate of 11.9 million bales in April 1942, the highest on record.

In general, military specifications for fabrics on breaking strength and other standards are higher than for the average run of fabrics for civilian use. Since many mills were producing military fabrics without previous experience, there was a tendency early in the defense program to play safe and use a staple length sufficiently long to insure the meeting of specifications. There was also an increased demand for the higher grades of cotton, for they could be handled in larger volume than the lower grades where machinery was a limiting factor. Higher grades tended to result in a better quality fabric, particularly with inexperienced labor, and were less dusty and therefore better liked by the operatives.

Efforts to increase the production of the longer staple lengths in 1942 met with some success, but the carry-over of the shortest cotton on August 1, 1942 was disproportionately large - about 27 months supply or three times as much as any other staple length (Table 4). Continued production of short staple cotton on farms where there were reasonably attractive alternatives was a business-as-usual luxury which the nation could ill afford, especially since Southern agriculture was being called upon to maximize its aggregate production. Consequently, in 1943 farmers formerly producing short staple cotton were urged to shift where practicable either to slightly longer staple varieties or to other crops essential to the war effort. To achieve a more balanced supply, farmers who already produced cotton of a satisfactory staple length were also urged to shift if practicable to slightly longer staple varieties.

The adjustments in total cotton acreage in 1943 were generally in line with the above recommendations, but it is too early to know the grade and staple composition of the crop. However, up to October 17 much more cotton grading strict middling and higher had already been ginned than the total quantities of these grades obtained in either 1941 or 1942. To date the staple length of the 1943 crop is slightly shorter than in either 1941 or 1942, largely as a result of the drought which damaged the crop in much of the Belt. Even more stress this year than last is being put on the need for picking and handling the crop so as to obtain the largest possible proportion of high grades.

Looking ahead to 1944 it is significant that the peak in mill consumption already has been passed. The tight labor situation in the cotton textile industry probably has been the most important factor accounting for the decline in mill consumption from an annual rate of 11.5 million bales during the last 6 months of the 1941-42 season to an annual rate of 10.9 million bales during the last 6 months of 1942-43. Cotton consumption is expected to total from about 10 million to 10-1/3 million bales this season compared with 11.1 million last year. In view of the larger proportion of

high grade cotton in the 1943 crop, the ability the mills demonstrated last season in using a shorter staple and lower grade cotton than that used in 1941-42, and the smaller prospective consumption this season, the 1943-44 supply of cotton is believed fully adequate to meet domestic and export needs, notwithstanding the fact that the grade of the 1943 carry-over was substantially lower than in 1942.

#### Relief and Rehabilitation

At the end of the war the carry-over of cotton in the United States probably will be somewhat smaller than in 1939 when it totaled about 13.0 million bales. The demand for certain crops which are now successfully competing with cotton is likely to be reduced and cotton production may again expand. The legislation providing for a continuation of government loans at 90 percent of parity for 2 years after the war may contribute to this result. The labor supply may also increase with demobilization. Further enlargements in the end-of-season carry-overs are therefore to be expected unless exports increase enough to offset the expected decrease in domestic consumption and the possible increase in production.

The carry-over of foreign cotton at the war's end will be much greater than the 7.5 million bales on August 1, 1939. By August 1, 1943, it had already risen to a record high of 12.4 million and the world carry-over of all cotton (American and foreign) reached a record high of 23.9 million bales with a much larger proportion of foreign cotton than in any recent year.

Although as a result of deprivation during the war period the need for cotton goods in foreign countries will be large, the actual effective demand for cotton will depend upon many factors. Japan, China, and the countries of continental Europe will be impoverished and more urgently in need of food than of textiles. The extent to which they will be able to buy cotton from the United States and other producing countries will depend upon continuance of lend-lease arrangements or the extension of credit in some other form. Even if the cotton is furnished free, the war-ravaged countries will take less of it than of food, for the cost of the raw material represents a comparatively small percentage of the price paid for clothing by the final consumer. Furthermore, the textile industry in large areas in Asia and continental Europe may have been destroyed or damaged by military operations.

Everything considered, it is improbable that the two or three years following the close of the war will see a pressure of demand upon available supplies of cotton like that for most food products. Furthermore as in the period immediately preceding the war, American cotton will continue to be at a disadvantage in competing with foreign growths unless (1) it is sold at the world price level, (2) exports are subsidized, or (3) special credit arrangements are developed.

### Post-War Outlook for Cotton

In the longer run the handicaps of the relief period and the mal-adjustments caused by the war will be superimposed upon the chronically bad situation for American cotton that prevailed during the 1930's. Mounting production of foreign cotton was partly responsible for the large carry-overs and reduced exports of American cotton in pre-war years. It is likely that foreign production will continue to increase, even though special nationalistic measures to encourage cotton production in certain foreign countries are abandoned.

For the world as a whole, the long-time upward trend in the demand for and consumption of cotton will probably be resumed in the post-war period, but the extent of this increase will depend upon many factors. Among these will be the degree of international cooperation and freedom of trade which will prevail, and particularly the growth in industrial activity and consumer incomes throughout the world. In an expanding world economy in which industrialization is extended, agriculture improved, and with a corresponding rise in incomes, the demand for cotton certainly will increase.

It is unlikely, however, that the increase in the demand for cotton will be in proportion to the rise in the demand for textiles as a whole. Synthetic fibers were competing to an increasing degree with cotton in pre-war years, and this is likely to be accelerated after the war. The growth in use of synthetics thus far has been due to improvements in their quality and reductions in their prices, to trends in consumer tastes and preferences in their favor, and to policies of economic nationalism which forced their use at the expense of cotton.

Even if the autarchic policies which favored synthetics are abandoned at the close of the war, the technological developments which accompanied their increased use will remain together with much of the production capacity which has been built. Furthermore, it is almost certain that wartime developments will result in the manufacture of new products, and in the devising of ways of making old products at lower cost, with a correspondingly greater appeal to consumers and industrial users in the post-war period.

It is pertinent to ask at this point whether the United States will really need an export market for cotton in the post-war period.

Cotton could be sold at favorable prices at home, if the present domestic demand for cotton were to remain at the peak wartime level or were to move still higher, and if domestic acreage were to be held at about present levels by the development in the South of attractive alternatives, both agricultural and industrial. The South could achieve at the same time a fuller utilization of its resources and a higher level of agricultural incomes than has prevailed in the past, and the United States might divorce itself from the export market for cotton.

Such a development, however, is not in sight in the calculable future. It is reasonable to expect that the United States will have for a long time to come a volume of cotton production in excess of domestic requirements. This must be exported if we are to avoid the economic folly of burdensome carry-overs. These plague the marketing of subsequent crops and eventually have either to be marketed in some form or destroyed.

Although domestic cotton consumption probably will average higher than in pre-war years, it is not reasonable to expect that it will approximate the wartime peak of more than 11 million bales per year. With respect to alternative opportunities, the South has been moving for some time in the direction of a more diversified agriculture and a higher degree of industrialization. These developments have been accelerated during the war and will continue in the post-war period. However, cotton will still possess a distinct advantage over other crops in large areas of the South. The principal factor is the supply of labor; no other crops using labor intensively can employ it in sufficient volume.

Of course, the volume of cotton production and the quantity of cotton available for export will depend on the production and price policy adopted for cotton and other farm products, as well as levels of industrial activity and employment, wage rates, and technological changes.

Because of higher incomes together with the tight farm labor situation in many areas, farmers have become increasingly interested in mechanization and improved practices. If labor is abundant and wages are low after the war, the rate of mechanization may be slowed down. If the reverse is true, farmers may adjust their cropping system or obtain additional machinery in order to reduce their needs for hired labor. Technological developments affecting the adaptability of machines to Southern agriculture will also affect mechanization.

In the past the need for large amounts of hand labor at picking time retarded the mechanization of cotton production. If the mechanical cotton picker is sufficiently perfected to make its purchase and use economical after the war, there may be a ready demand for it provided that incomes are sufficient to permit its purchase.

The potentialities of mechanization are greatest in areas with favorable topography such as in a large part of Western Texas and Oklahoma and the Delta areas of the Mississippi River. Unless mechanical pickers or ginning machinery are improved so as to result in higher grades than can now be obtained, farmers in the Delta areas may find it unprofitable to harvest long staple cotton mechanically because of the narrower premiums of low grade long staple cotton over the higher yielding shorter staple varieties. The widespread adoption of mechanical pickers might well be accompanied by a shifting from long staple to higher-yielding medium staple varieties, for which the discount for any deterioration of grade probably would be smaller.

Even though the Delta cotton areas produce high quality cotton, mechanized farms on the Delta, having better alternatives than farms in some other area, might shift part of their resources from cotton to other lines of production at relatively low prices; whereas in the High Plains and the Piedmont there might be no practical alternative to cotton.

Mechanization in the Foothill and Piedmont areas cannot be expected to proceed at a very rapid rate because of such factors as the small size of units associated with low incomes, topography, the high ratio of population to land, and the general lack of enterprises which are conducive to mechanization. Inasmuch as cotton production will continue to be on a fairly intensive basis in this area a continuation of the trend toward better varieties can be anticipated.

Mechanization in the Coastal Plain has been proceeding at a fairly rapid rate. It has been mainly associated, however, with crops other than cotton, such as small grains, peanuts and hay crops and with land breaking operations. Continuation of this trend may further decrease the comparative advantage of cotton in these sections and encourage extensification of farming. Although cotton acreage allotments on an historical base result in some obvious rigidities, some adjustments in acreage have been possible since 1934 through the medium of over- and under-planting of allotments.

#### Other Fibers in the Post-War Period

It is too early to forecast the full impact of synthetic fibers on cotton and other domestic fibers in the post-war period. Rayon rose in importance from an entirely new fiber just before the outbreak of World War I to a position of importance among apparel fibers in the United States second only to cotton in 1940 when the supply made available to consumers in this country averaged 3.6 pounds per capita (Table 5). Since the early 1930's much headway has been made by rayon staple fiber. More recently nylon, aralac, spun glass, and other synthetics have been introduced. Synthetic fibers are demonstrating their ability to compete successfully with cotton and other vegetable and animal fibers in a far wider variety of uses than ever before. Prospects are that the expansion in synthetics will continue in the post-war years.

During the inter-war period rayon competed most directly with silk, driving it almost entirely out of the broad goods field and leaving silk definitely superior only in sheer hosiery. Nylon promises to dislodge silk even from this field. Rayon has competed successfully with cotton in many uses such as inexpensive hose, underwear and dresses. Fabrics of rayon staple fiber have successfully competed with both wool and cotton. Less is known about the potentialities of the newer fibers, but it is certain that synthetic fibers will give keener competition than ever before to natural fibers in clothing, house furnishings and industrial uses. In some uses synthetics are even making inroads against bristles. How successfully synthetics can compete with cordage fibers remains to be seen.

Large stocks of wool are now held by the United States and the United Kingdom; several years will be required to dispose of this accumulation. Once this is done, however, the supply of and the demand for wool should be reasonably well balanced in the United States and in the world as a whole, if business activity and trade are on a comparatively high level.

The United States is an importer of most other fibers, dependent on some much more than others. Those imported and used chiefly in cordage and miscellaneous industrial purposes should revert pretty much to the pre-war situation. Supplies of abaca, henequen, sisal and hemp will be available from other countries. Their importation will be mainly supplementary rather than competitive with United States fiber.

Our domestic hemp industry is also being revived. At the close of the war, production in this country probably will be much above imports during the 1930's. The United States, however, is at an outstanding disadvantage in hemp production and the present growth is possible only under artificially high prices and other forms of government encouragement. The domestic hemp industry could be maintained on a wartime scale in the post-war period only through the use of a very high protective tariff or the direct payment of some form of bounty.

The future for jute in this country remains rather obscure. Burlap continues to be the world's cheapest packing material. However, if the experience this country will have had with cotton bags is satisfactory, and if a burdensome surplus of cotton accumulates, the demand may be made that this country adopt a nationalistic program requiring use of domestically produced cotton bags despite their greater cost.

## II. Tobacco

The use of tobacco is world-wide, being largest in countries with high standards of personal efficiency and high levels of income. Since it has not been considered a necessity of life, the increase in its use and the habit-forming nature of its consumption have caused it to be an important source of revenue for practically all governments.

World production and consumption prior to World War II averaged about 4.9 billion pounds (Table 6). Per capita consumption ranged from about 7 pounds in the United States and certain Northern European countries to as low as 1 or 2 pounds in the low-income areas of Europe, Asia and South America. The principal factors affecting tobacco consumption are the availability of tobacco products, habit and custom, consumer incomes, and prices charged for tobacco products.

The properties of tobacco and the kind of products for which a particular kind of leaf is suited depend primarily upon soil, climate, and methods of handling. Consumers become accustomed to using tobacco products made from particular types of leaf and tend to continue to demand the same kind of

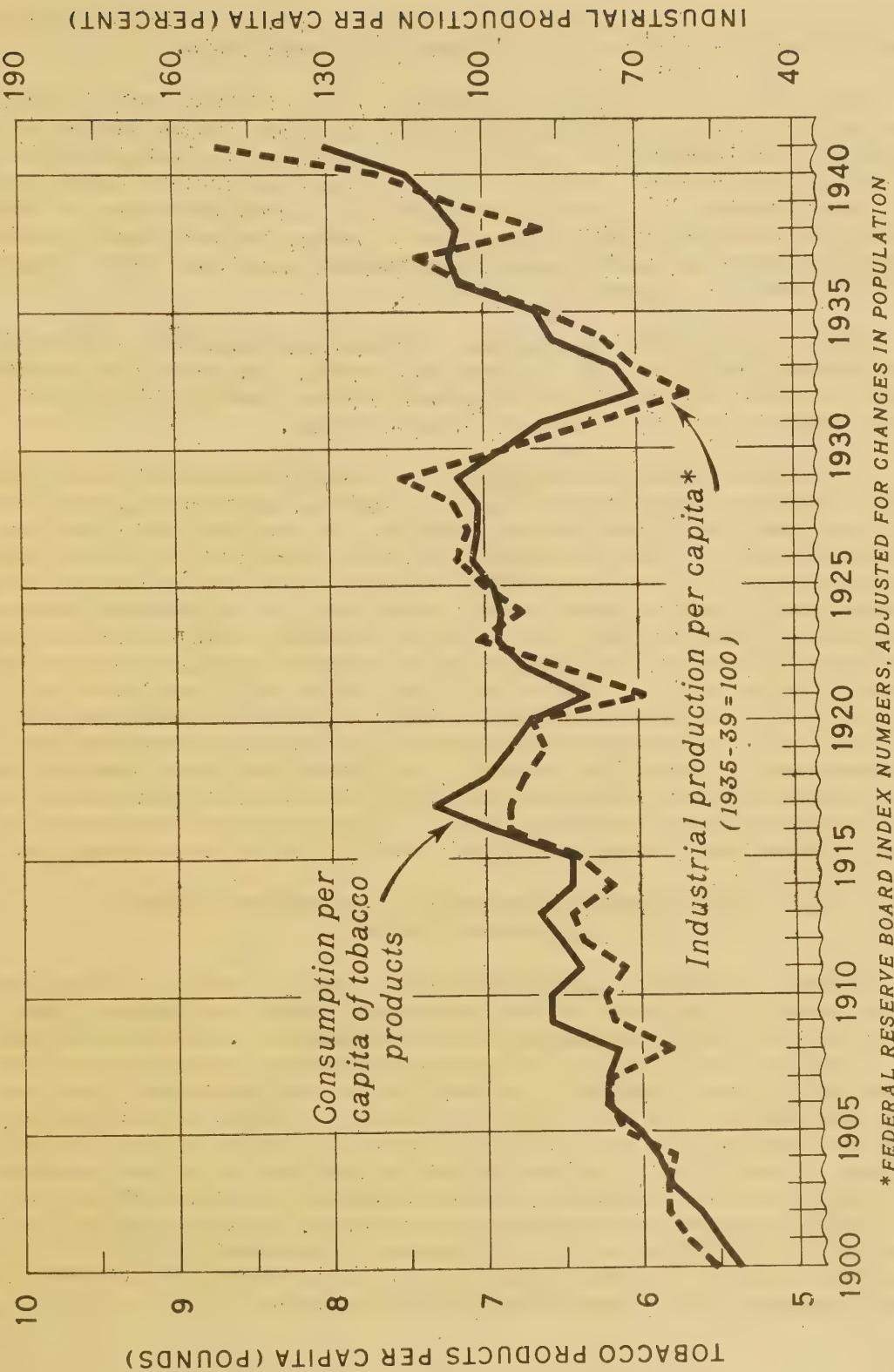
product. On the other hand, over considerable periods of time, changes in consumer tastes and preferences have wrought changes in the pattern of tobacco production. Since World War I the popularity of cigarettes both in the United States and many foreign countries has increased, while the consumption of chewing tobacco, snuff and to a lesser extent cigars and smoking tobacco, has declined. These shifts in demand have caused corresponding changes in tobacco production. Income from the sale of the cigarette tobaccos - flue-cured and light air-cured - represented less than half the total farm income from tobacco in the early 1920's, but from 85 to 90 percent in recent years.

Although the response of tobacco production to changes in consumer income and general business activity is smaller than for many other commodities, Neg. 24111 indicates that there is some similarity in movement between industrial production and tobacco consumption per capita in the United States. Essentially the same relationships prevail in foreign countries. Differences in prices charged consumers for tobacco products between one country and another and between one time and another have been primarily due to different and changing levels of taxes. Per capita consumption of tobacco in the United Kingdom in 1930 was about half that of the Netherlands, a reflection for the most part of the marked divergence in the tax policies of the two countries. Changes in prices and taxes in the United States in recent years have not been great enough to influence tobacco consumption appreciably, but retail prices for tobacco products have trended upward in Europe and the Orient, owing mainly to tax and price policies.

With tobacco consumption so widespread, the concentration of production of superior qualities of leaf in certain areas has made tobacco an important commodity in world commerce. Since early colonial times the United States has been the principal exporter. Before World War I exports consisted chiefly of the dark types, but by the late 1930's flue-cured types accounted for more than 80 percent of the total leaf tobacco exported from the United States. The United Kingdom has always been the principal importer of flue-cured leaf (Table 7).

The domestic demand for American tobaccos has increased sharply during the war. This has been due both to heavy consumption by the armed forces and to an increase in civilian demand associated with higher levels of consumer income. The unstemmed equivalent of leaf used in the manufacture of cigarettes in 1942 is estimated at about 740 million pounds, and leaf used in tobacco products as a whole at nearly 1.2 billion pounds, or more than a third higher than the 1935-39 average. Early in the war period foreign markets were largely cut off due to a sharp curtailment in tobacco purchases by the British and to the blockade of continental Europe. In April 1941, however, the first shipments of tobacco were made under Lend-Lease and since that time between 400 and 500 million pounds of flue-cured have been sent abroad under this arrangement, about 87 percent going to the United Kingdom. In recent months shipments under Lend-Lease arrangements have constituted a

CONSUMPTION PER CAPITA OF ALL TOBACCO PRODUCTS, AND  
INDUSTRIAL PRODUCTION PER CAPITA, UNITED STATES, 1900-1941



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The October, 1943, revision of the Federal Reserve index of industrial production would not materially affect the conclusions drawn from this chart.

smaller proportion of total exports, as tobacco for use by civilians in allied and neutral countries is now being exported on a cash basis.

The United States has been increasingly cut off from overseas supplies of raw materials from which important insecticides and fungicides are made. Consequently this country has expanded the production of nicotine sulfate and other tobacco byproducts in order to meet the needs of food producers in this and allied countries. In order to make possible larger production of such tobacco byproducts under prevailing price ceilings, the government has subsidized the diversion of dark tobaccos to byproduct manufacture with a resulting sharp increase in demand for dark leaf.

At the close of the war, stocks of commercial types of leaf tobacco will be comparatively low both at home and abroad. The demand for tobacco products will be very great, and undoubtedly severe demands will be made upon American supplies to help replenish foreign stocks.

Some further increase in cigarette consumption extending over a considerable number of years appears highly probable, although it may be at a slower rate than during the inter-war period. In the long run, therefore, it is likely that the domestic production of the important cigarette types, flue-cured and burley, can be expanded somewhat in the United States, while the production of dark tobaccos - now a minor part of the tobacco picture - should remain at about present levels or be contracted further. Foreign production of flue-cured leaf will resume its upward trend, but demand may increase fully as rapidly so that the United States will continue to be a large exporter, especially if business activity and world trade are on a high level and if the more extremely burdensome taxes and trade restrictions affecting tobacco can be removed or reduced. In Virginia and North Carolina, and to some extent in South Carolina and Georgia, flue-cured tobacco already has proved a profitable alternative to cotton. Further shifts from cotton to tobacco in these areas probably will be feasible in the post-war period.

### III. Some possible approaches to the cotton problem in the post-war period.

Several alternative approaches might be used to secure a place for American cotton in the export market to balance supply and demand. Each approach possesses both advantages and disadvantages. Presumably the one chosen should be that which in the long run would not only come nearest to providing satisfactory returns to cotton farmers but would also result in the fullest utilization of resources and the maximum material well-being for the economy as a whole. One method of dealing with the problem would be to permit cotton farmers to grow as much cotton as they wish at prices prevailing in the world market. This method would eliminate the cost, mistakes and rigidities which accompany government programs, and would secure in the course of time an abandonment of cotton cultivation in some parts of the United States and its concentration in areas best suited to its production. It would also provide consumers with cotton at relatively low cost.

But the adoption of a policy of laissez-faire would conflict with the immediate desire to maintain the incomes of cotton producers. Shifts in production would be slow and would involve serious distress to large numbers of people. In fact, unless positive measures were taken to provide favorable alternative opportunities - the taking of such measures, of course, would constitute a departure from laissez-faire - the process of readjustment might be undesirably prolonged and intensified.

Another approach would involve the use of some form of a two-price system, the domestic allotment plan or some type of export subsidy. Such a method of dealing with the problem would have several advantages. Probably the most important advantage is that it would provide a means for raising incomes of cotton producers but at the same time permit American cotton to find a market abroad in successful competition with foreign growths.

There would be several disadvantages, however. In the first place, the cost of cotton to domestic consumers probably would be higher than otherwise would be the case. Secondly, unless combined with wisely conceived and strongly administered programs to concentrate cotton growing in the areas in which it has the greatest advantage and stimulate the shift to alternative enterprises in other areas, this method would be likely to involve an indefinite subsidy to cotton producers at the expense of the rest of the economy. Thirdly, two-price systems which involve lower prices for sales abroad than for sales in the domestic market, especially if outright export subsidies are employed, are looked upon with disfavor by other producing countries who frequently resort to retaliatory action of some kind. Not only would such retaliation be apt to offset any benefits flowing from the program of the United States, but would represent a form of economic warfare which would be inconsistent with the desire to improve international relations and increase the volume of world trade in the post-war period.

A solution to the cotton problem might be sought through the entrance of the United States and other cotton producing countries into an international cotton agreement. There have been numerous international commodity agreements in the past and some, including one dealing with wheat and another with coffee, are more or less operative at the present time. Past efforts with international commodity control have been concerned primarily with increasing prices to producers, and the interests of consumers have been largely ignored. In addition, the establishment of production and export quotas on historical bases has tended to freeze existing patterns of production and retard the desirable shift in output from high cost to low cost areas. Furthermore, price raising efforts in most cases have failed after an initial period of success due to the inclusion of too small a percentage of total production in the agreement or because the member States did not adopt domestic policies consistent with the agreement. The result has usually been a collapse of production and price control efforts through the expansion of production in non-agreement areas or through the violation of the agreement by member States.

If an international cotton agreement were to represent a satisfactory solution of the cotton problem, it should provide for the protection of consumer as well as producer interests. It must include all important producing countries. It should not be merely a restrictionist scheme but should provide for international and national measures to reorient production in line with the principle of comparative advantage involving the concentration of production in the most suitable areas and the shift of high cost producers to alternative enterprises.

The various approaches mentioned above, of course, are not mutually exclusive but might be applied more or less in combination. There will be no easy way of solving the problem of adjusting supply and demand for the chief cash crop of Southern agriculture. Whichever approach is employed will require courage, skill, the soundest economic judgment, constructive legislation, and patience to persevere for a considerable period of time.

Table 1. - World Production of Eight Specified Fibers  
Average 1910-14 and Annually 1925-39

(In Millions of Pounds)

Year	Cotton	Wool	Silk	Rayon	Flax	Jute	Hemp	Abaca	Total
<b>1910-14</b>									
average .....	10,059	2,904	.59	202	1,265	3,408	1,144	343	19,384
1925 .....	12,747	3,360	104	186	1,307	3,603	1,313	436	23,056
1926 .....	13,263	3,560	111	214	1,332	4,880	1,206	398	24,964
1927 .....	11,157	3,610	118	299	1,259	4,119	1,228	401	22,191
1928 .....	12,296	3,740	129	366	1,229	4,004	1,182	381	23,327
1929 .....	12,600	3,760	134	441	1,400	4,171	1,153	394	24,053
1930 .....	12,158	3,680	130	457	1,440	4,520	1,075	470	23,930
1931 .....	12,762	3,680	126	508	1,581	2,259	854	431	22,201
1932 .....	11,234	3,680	116	535	1,377	2,864	730	358	20,894
1933 .....	12,620	3,600	122	691	1,579	3,246	717	287	22,862
1934 .....	11,043	3,530	125	824	1,637	3,454	707	296	21,616
1935 .....	12,564	3,600	121	1,081	1,900	2,954	739	397	23,356
1936 .....	14,700	3,720	119	1,322	1,735	3,898	826	442	26,762
1937 .....	17,819	3,790	121	1,819	1,831	3,517	846	430	30,173
1938 .....	13,282	3,920	123	1,946	1,793	2,778	948	442	25,232
1939 .....	13,253	4,100	123	2,227	1,909	3,946	913	364	26,835

Division of Statistical and Historical Research, Bureau of Agricultural Economics,  
U. S. Department of Agriculture. Compiled from official sources and generally  
reliable trade sources.

Table 2. - Cotton: Consumption Classified According  
to Use, United States, 1937 and 1939

Thousands of Bales  
(478 lb. net)

Uses	Actual		Percent of Total	
	1937 Bales	1939 Bales	1937	1939
All apparel .....	2,602	2,732	38.7	37.8
Household .....	1,500	1,808	22.3	25.1
Industrial .....	2,626	2,677	39.0	37.1
Auto Tires .....	634	633	9.4	8.8
Bags .....	477	459	7.1	6.4
Cordage .....	325	357	4.8	4.9
Mixtures (with other fibers). .	116	131	1.7	1.8
Other .....	1,074	1,097	16.0	15.2
Total .....	6,728	7,217	100.0	100.0

Bureau of Agricultural Economics, U. S. Department of Agriculture. Compiled  
from Cotton Counts Its Customers, a joint project of the Bureau of Business  
Research, University of Mississippi, and the Division of Research, National  
Cotton Council of America.

Table 3. - Cotton: World Supply and Consumption, 1920-43.

Year	(In millions of bales.)			American in running bales, etc.)			SUPPLY			MILL CONSUMPTION			U. S.		
	PRODUCTION	CARRY-OVER	American	U. S.	For- can	Total Loan	World kinds	can	Total : can	Ameri- can	For- ign	Total : can	Ameri- can	Total farm	Season
Aug.	Mil.	Mil.	Mil.	Mil.	Mil.	Mil.	Mil.	Mil.	Mil.	Mil.	Mil.	Mil.	Mil.	Mil.	price
	bales	bales	bales	bales	bales	bales	bales	bales	bales	bales	bales	bales	bales	bales	Cents per lb.
	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	
1920-24 Av.	11.3	8.2	19.5	0	3.4	5.5	4.8	10.3	16.8	13.0	29.8	11.8	8.4	20.2	21.47
1925-29 Av.	15.3	10.7	26.0	0	2.6	5.3	5.1	10.4	20.6	15.8	36.4	14.7	10.5	25.2	17.41
1930-34 Av.	13.2	11.7	24.9	3/2.2	7.2	10.2	5.8	15.9	23.4	17.4	40.8	12.6	11.6	24.2	8.83
1935	10.5	15.6	26.1	5.1	7.1	9.0	6.0	15.1	19.5	21.7	41.2	12.5	15.0	27.5	11.09
1936	12.4	18.4	30.7	3.2	5.3	7.0	6.7	13.6	19.4	25.0	44.4	13.1	17.5	30.6	12.33
1937	18.4	18.3	36.7	1.7	4.4	6.2	7.5	13.7	24.6	25.8	50.4	10.8	16.8	27.6	4/ 8.41
1938	11.7	15.8	27.5	7.0	11.4	13.8	8.9	22.7	25.5	24.8	50.2	11.2	17.3	28.5	8.60
1939	11.4	15.9	27.3	11.0	13.0	14.1	7.5	21.6	25.6	23.4	49.0	12.9	15.6	28.5	9.09
1940	12.3	16.3	28.6	8.7	10.5	12.5	7.7	20.3	24.8	24.0	48.9	11.9	14.7	26.5	4/ 9.89
1941	10.6	15.6	26.2	7.0	12.0	12.8	9.2	22.0	23.4	24.8	48.2	12.2	13.4	25.6	17.02
1942 2/	12.6	13.8	26.5	4.2	10.5	11.1	11.4	22.5	23.7	25.3	49.0	12.1	12.7	24.8	19.04
1943 5/	12.2	...	...	4.6	10.6	11.5	12.4	23.9	22.7						

Bureau of Agricultural Economics, U. S. Department of Agriculture.

1/ Excludes from 18,000 to 283,000 bales destroyed annually in recent years.  
2/ American in running bales (counting round bales as half bales) and foreign in bales of approximately 478 pounds net weight.

3/ Probably excludes some futures, the exact amount of which is not known.

4/ Includes unredeemed loan cotton at estimated average loan value. Based on returns from special price reporters.  
5/ Preliminary and partly estimated.

Compiled from reports of the Bureau of the Census, the New York Cotton Exchange Service, the Commodity Credit Corporation, and estimates by the Department of Agriculture.

Table 4. - Cotton, American Upland: Supply and Distribution, by Grade and Staple Length, 1941-43.

Staple length and grade	YEAR BEGINNING AUGUST						1943-44			
	1941-42			1942-43			SUPPLY	CARRY-OVER		
	Carry-over	Production	Total	Disappearance	Carry-over	Production	Total	Disappearance	Actual	Percentage of 1942-43 disappearance
1,000 running bales	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
29/32" and shorter:										
Strict Middling and higher	287	50	337	173	164	97	261	168	93	55
Middling	1,521	231	1,752	611	1,141	596	1,737	800	937	117
Strict Low Middling	1,395	464	1,859	422	1,437	790	2,227	639	1,988	249
Low Middling and lower	357	920	1,277	392	885	716	1,601	433	1,168	270
Total	3,560	1,665	5,225	1,598	3,627	2,199	5,826	2,040	3,786	186
15/16" through 1":										
Strict Middling and higher	547	268	815	531	284	216	500	339	161	47
Middling	1,905	1,565	3,470	2,417	1,053	1,788	2,841	2,000	841	42
Strict Low Middling	1,762	1,368	3,130	1,784	1,346	1,774	3,120	2,062	1,058	51
Low Middling and lower	653	855	1,508	420	1,088	876	1,264	772	1,192	154
Total	4,867	4,056	8,923	5,152	3,771	4,654	8,425	5,173	3,252	63
1-1/32" through 1-3/32":										
Strict Middling and higher	760	406	1,166	711	455	497	952	580	372	64
Middling	1,194	1,746	2,940	2,077	863	2,118	2,981	1,908	1,073	56
Strict Low Middling	657	1,475	2,132	1,373	759	1,720	2,479	1,617	862	53
Low Middling and lower	244	371	615	257	358	446	804	254	450	127
Total	2,855	3,998	6,853	4,418	2,435	4,781	7,216	4,459	2,757	62
1-1/8" and longer:										
Strict Middling and higher	256	105	361	181	180	123	303	120	183	153
Middling	317	326	643	353	290	371	661	354	307	87
Strict Low Middling	129	252	381	244	137	208	345	146	199	136
Low Middling and lower	27	31	58	23	35	27	62	16	46	288
Total	729	714	1,443	801	642	729	1,371	636	735	116
All lengths:										
Strict Middling and higher	1,850	829	2,679	1,596	1,083	933	2,016	1,207	809	67
Middling	4,937	3,868	8,805	5,458	3,347	4,873	8,220	5,062	3,158	62
Strict Low Middling	3,943	3,559	7,502	3,823	3,679	4,492	8,171	4,464	3,707	83
Low Middling and lower	1,281	2,177	3,458	1,092	2,266	2,065	4,431	1,575	2,856	181
Total	12,011	10,433	22,444	11,969	10,475	12,363	22,838	12,308	10,530	86

Bureau of Agricultural Economics, U. S. Department of Agriculture. Compiled from reports of the Food Distribution Administration.

Table 5. — Per Capita Quantities of Designated Fibers Made Available for Ultimate Consumers,  
Average July 1909—June 1914 and Annual 1925-40

Calendar year	(In Pounds)						Total fibers	Hemp	Total all fibers
	Cotton	Wool	Silk	Rayon	Flax	apparel			
Average July 1909— June 1914 .....	25.1	3.4	.3	2/	.8	29.6	7.5	4.3	.3
1925 .....	25.3	3.5	.7	.5	.4	30.4	7.5	4.0	.1
1926 .....	25.9	3.4	.7	.5	.5	31.0	7.9	3.8	.1
1927 .....	28.5	3.5	.8	.9	.4	34.1	7.9	3.6	.1
1928 .....	24.8	3.3	.8	.8	.4	30.1	7.8	3.6	2/
1929 .....	26.2	3.5	.8	1.1	.4	32.0	7.5	4.2	.1
1930 .....	20.0	2.5	.7	.9	.4	24.5	6.8	3.1	34.4
1931 .....	20.2	2.8	.7	1.3	.3	25.3	5.3	2.5	33.1
1932 .....	18.7	2.1	.6	1.2	.3	22.9	4.2	3.9	31.0
1933 .....	23.3	2.8	.6	1.7	.3	28.7	5.0	3.4	37.1
1934 .....	20.4	2.0	.5	1.6	.3	24.8	4.7	2.5	32.0
1935 .....	21.1	3.5	.6	2.0	.3	27.5	5.5	3.7	3/
1936 .....	26.6	3.6	.5	2.5	.4	33.6	6.4	3.7	43.7
1937 .....	27.6	3.3	.5	2.4	.4	34.2	8.2	3.7	46.1
1938 .....	21.7	2.4	.5	2.5	.2	27.3	5.5	2.9	35.7
1939 .....	26.8	3.4	.4	3.4	.3	34.3	4.4	3.5	42.2
1940 4/ .....	29.1	3.4	.4	3.6	.2	36.7	5.1	3.9	3/
									45.7

Bureau of Agricultural Economics, U. S. Department of Agriculture

1/ Based on annual midyear population estimates of the Bureau of the Census.

2/ Including mohair, camel's hair, etc.

3/ Less than 0.05 pound.

4/ Preliminary.

Compiled from Trends in the Consumption of Fibers in the United States 1892-1939 by Robert B. Evans and Rose F. Monachino.

Table 6. - Average Annual Tobacco Production in Selected Countries and Periods

(In thousands of pounds)

Countries	Annual Average 1920-24	Annual Average 1925-29	Annual Average 1930-34	Annual Average 1935-39
United States .....	1,306,191	1,356,486	1,336,559	1,453,120
Brazil .....	157,834	181,959	216,447	1/ 187,295
Bulgaria .....	77,199	60,579	53,527	75,851
China .....	.....	.....	2/1,357,813	3/1,498,201
Cuba .....	64,447	61,488	56,447	48,025
France .....	58,879	60,677	71,259	76,011
Germany .....	49,255	44,111	60,304	74,473
Greece .....	83,289	137,964	103,615	132,819
Hungary .....	39,570	57,566	67,145	46,740
India .....	.....	3/1,366,624	1,369,670	4/1,106,290
Italy .....	58,929	91,138	106,218	1/ 95,624
Japan .....	140,428	141,785	145,330	148,680
Java and Madura .....	1/ 91,716	137,072	117,107	75,033
Korea .....	29,577	41,591	36,778	58,328
Philippine Islands ...	98,673	101,924	92,249	72,278
Sumatra .....	32,698	42,937	34,004	30,131
U.S.S.R. ....	.....	345,981	340,805	3/ 544,918
Yugoslavia .....	36,265	23,458	26,141	36,227
World Total .....	4,149,200	4,916,000	4,904,000	5,191,038

Bureau of Agricultural Economics, U. S. Department of Agriculture

1/ 4-year average.

2/ 2-year average.

3/ 3-year average.

4/ 4-year average. Excluding Burma which became independent from British India in April 1937.

Compiled as follows: 1920-34, World Acreage and Production of Tobacco by Countries (Historical Series); 1935-39, Annual Report on Tobacco Statistics, 1940. Agricultural Statistics, 1942.

Table 7. - International Trade in Tobacco, 1920-39

	Average, 1920-1929		Average, 1930-1934		Average, 1935-1939	
	Exports	Imports	Exports		Exports	Imports
			(In thousands of pounds)	(In thousands of pounds)		
United States	514,342	73,045	479,027	63,588	420,795	71,274
Netherlands Indies	160,554	6,520	143,887	8,204	101,176	2,765
Turkey	71,859	0	57,537	114	78,054	152
Greece	88,146	70	88,048	50	97,657	20
Brazil	72,151	3,059	67,101	2,101	71,891	772
Bulgaria	54,307	0	48,886	0	59,396	0
Philippine Islands	47,522	506	44,917	1,604	37,357	1,075
Cuba	36,059	0	38,551	0	27,712	0
British India	36,469	10,524	35,810	12,121	51,656	13,610
Germany	738	208,560	888	191,864	3/	15
United Kingdom	6,448	192,924	8,976	199,485	5,596	4/202,287
China	27,129	74,800	20,276	98,744	30,994	258,486
France	870	87,623	1,387	104,127	3/	56,613
Netherlands	4,638	67,996	4,044	71,961	3,249	2/ 61,567
Spain	18	55,885	0	62,733	0	67,349
Belgium	274	43,124	436	47,198	413	61,038
Austria	1,373	29,143	2,641	24,097	4/ 1,793	40,692
Canada	3,642	17,279	9,181	12,027	15,294	4/ 18,784
Italy	4,129	34,484	8,621	7,966	3/ 12,498	4,255
Japan	2,384	11,067	2,576	12,171	9,689	5,346

Bureau of Agricultural Economics, U. S. Department of Agriculture.

1/ 7-year average.

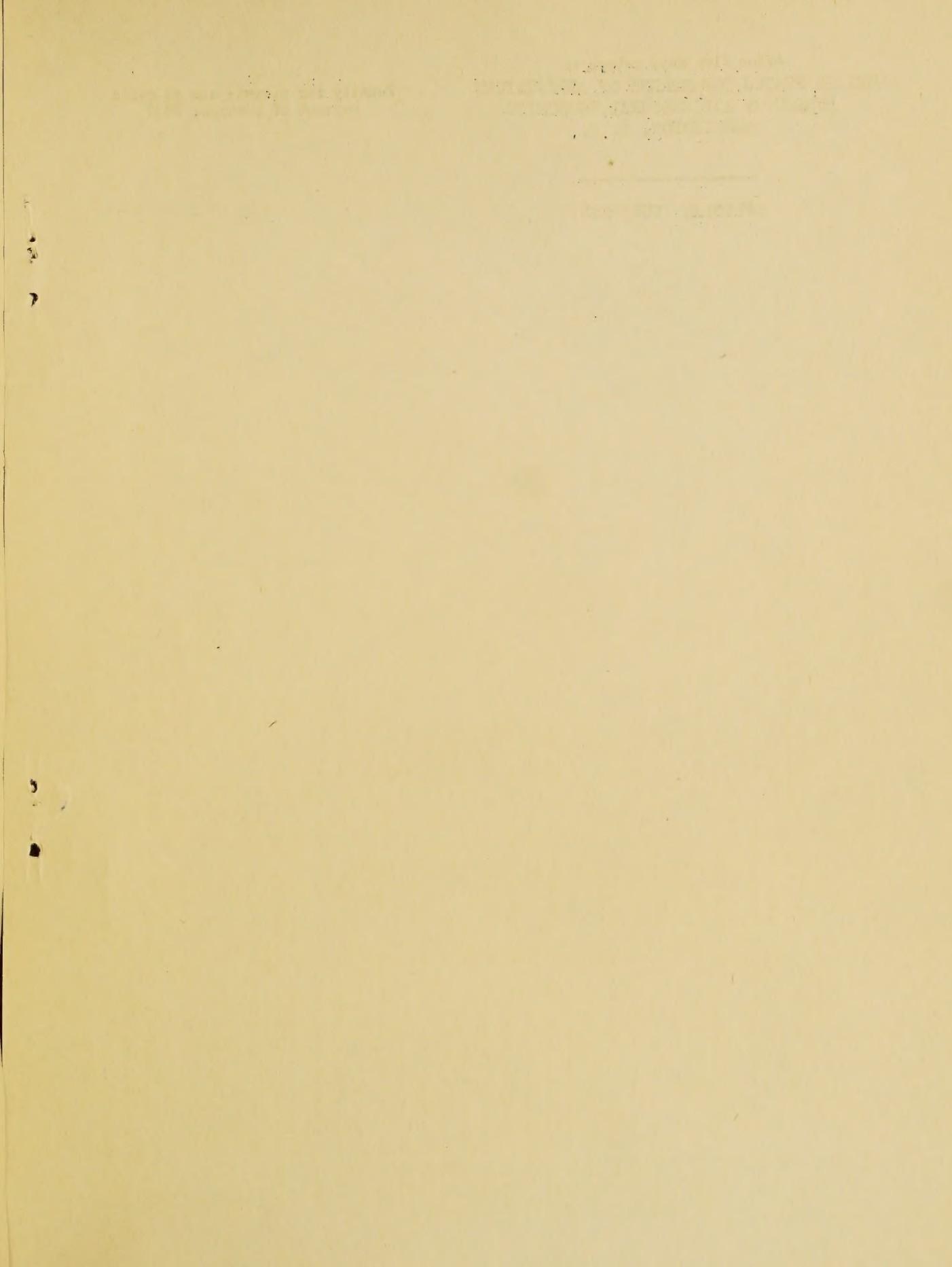
2/ 2-year average.

3/ 4-year average.

4/ 3-year average.

5/ Year 1935 only.

Compiled as follows: 1920-36, Senate Document No. 39, 76th Congress, first session, page 5. 1930-34 Agricultural Statistics, 1942. 1935-39, Annual Report on Tobacco Statistics, 1940. Tobacco comprises leaf, stems, and trimmings.



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